Wyoming Drought Information

Rangeland Precipitation---Water Supply---Mountain Snowpack
3 Key Ingredients Defining Drought in Wyoming

Updated October 29, 2010

…Moderate hydrologic drought conditions continue across the Upper Green and Shoshone Watersheds…

…Normal to above normal precipitation totals for rangelands/basins across almost all of Wyoming for water year 2010 (October 2009 - September 2010)…

…Normal to above normal mountain snowpack averages across basins east of the continental divide during water year 2010---Below normal mountain snowpack average across watersheds west of the continental divide…

…Above to well above normal stream flows during the Spring runoff---Near normal to slightly above river flows into the summer and early fall…

…Reservoir storages across Wyoming continue to remain slightly higher than water year 2009…

.Synopsis…

3 key ingredients define the overall drought picture for Wyoming: **Rangeland Precipitation**---**Water Supply**---**Mountain Snowpack**

Rangeland/Watershed Precipitation---
Precipitation across Wyoming's pasturelands/rangelands during the water year 2010 (October 2009 - September 2010) was normal to above normal for almost all of Wyoming. Precipitation across the major river basins across Wyoming was also near normal to above normal. Specifically, precipitation averages across Wyoming's major watersheds varied from 84 to 133 percent of average during water year 2010.

Water Supply---
Reservoir storages at the end of water year 2010--at a majority of the major reservoir--continue to be slightly above water year 2009 averages. Storages at the big reservoirs along the North Platte River had very sharp gains during a record spring runoff; but by the end of the water year, storages were still higher than at the end of water year 2009. Seminoe and Pathfinder Reservoirs, respectfully, ended up at 84 and 73 percent of capacity by the end of the water year.

Streamflows across Wyoming during the runoff were above to well above normal. Streamflow trends into the summer and into early fall were normal to slightly above normal.

Mountain Snowpack---

Snow water equivalents (SWEs) for water year 2010 were near normal to above normal across all major watersheds east of the continental divide; however, mountain snowpack averages were below normal across major watersheds west of the continental divide.

Overall Drought Picture// and What Does the Future Hold?

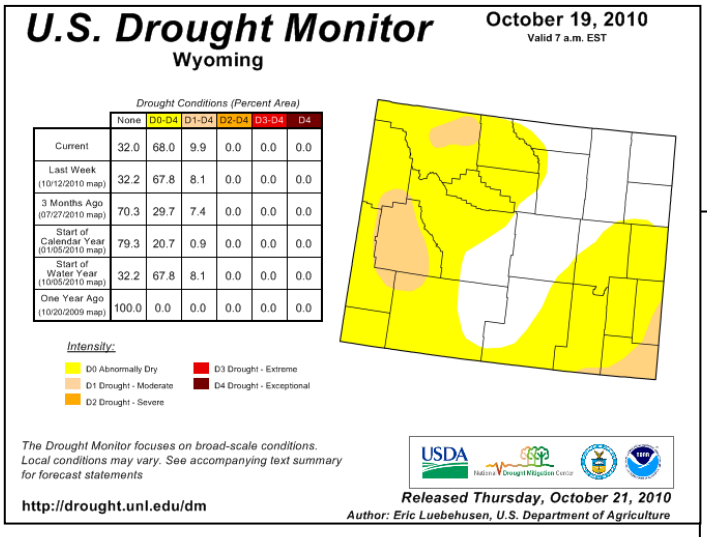
Lack of adequate snowpack for the Upper Green and Shoshone River Basins was the main driving force that kept these watersheds in moderate hydrologic drought during most of water year 2010. The above average precipitation during the spring and subsequent record spring runoff for many locations--especially east of the continental divide--kept the rest of Wyoming out of hydrologic drought during water year 2010. However, even though the summer of 2010 had near normal temperatures, it became very dry after the middle of June. September and October were also very dry and temperatures were above normal during the same time. The dry conditions during summer and into early fall has caused a significant soil moisture deficits across many rangeland locations across Wyoming.

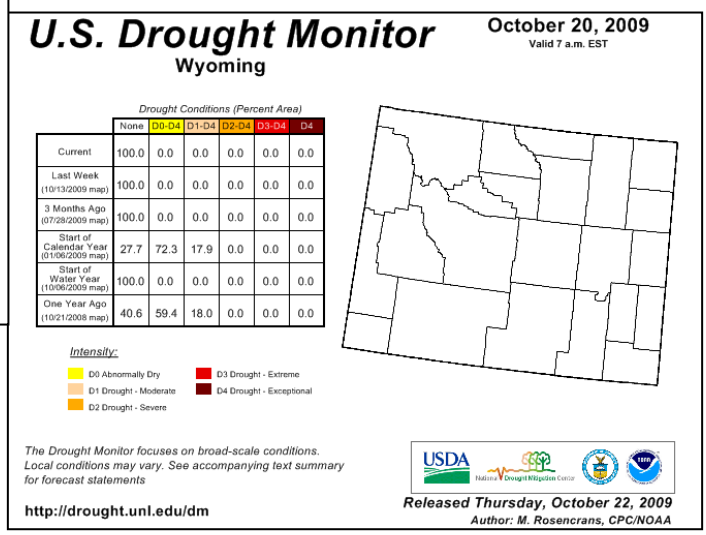
The above average runoff---and even record runoff at several watersheds---quickly filled many major reservoir across Wyoming. However, due to the dry summer and early fall, many reservoirs showed significant decreases in storages by the end of the irrigation season. Even so, reservoir storages across Wyoming in water year 2010 remained slightly above water year 2009 reservoir storages. Most importantly, the big reservoirs (Boysen, Seminoe, and Pathtfinder) have kept storages at greater than 70 percent of capacity.

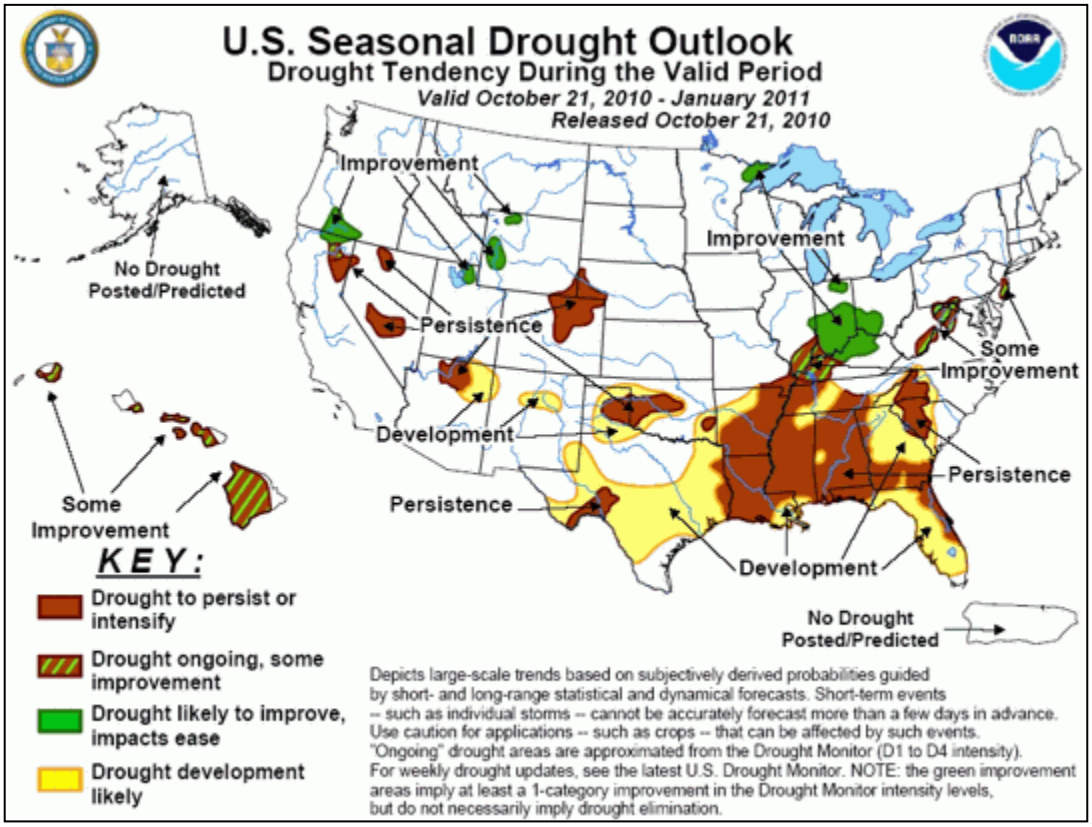
Wyoming's mountain snowpack averages--especially for basins east of the continental divide---were near normal to above average for the third straight water year. However, late fall and early winter snowpack averages across Wyoming during the past 3 water years have continued to be below average. It hoped that with the soil moisture deficits that have shown up during the early fall, an adequate late fall/early winter snowpack will reverse the "dry" antecedent soil conditions.

Bottom line is that current precipitation trends (during the last 4 months) have caused short-term hydrologic condition concerns. However, current water supply and streamflow trends are not pointing to any development of another significant long-term hydrologic drought. Wyoming is the 5th driest state in the country--so drought is always 'knocking-on' on Wyoming's backdoor.

Wyoming Drought Monitor (Current and 1 year ago)
Drought Outlook

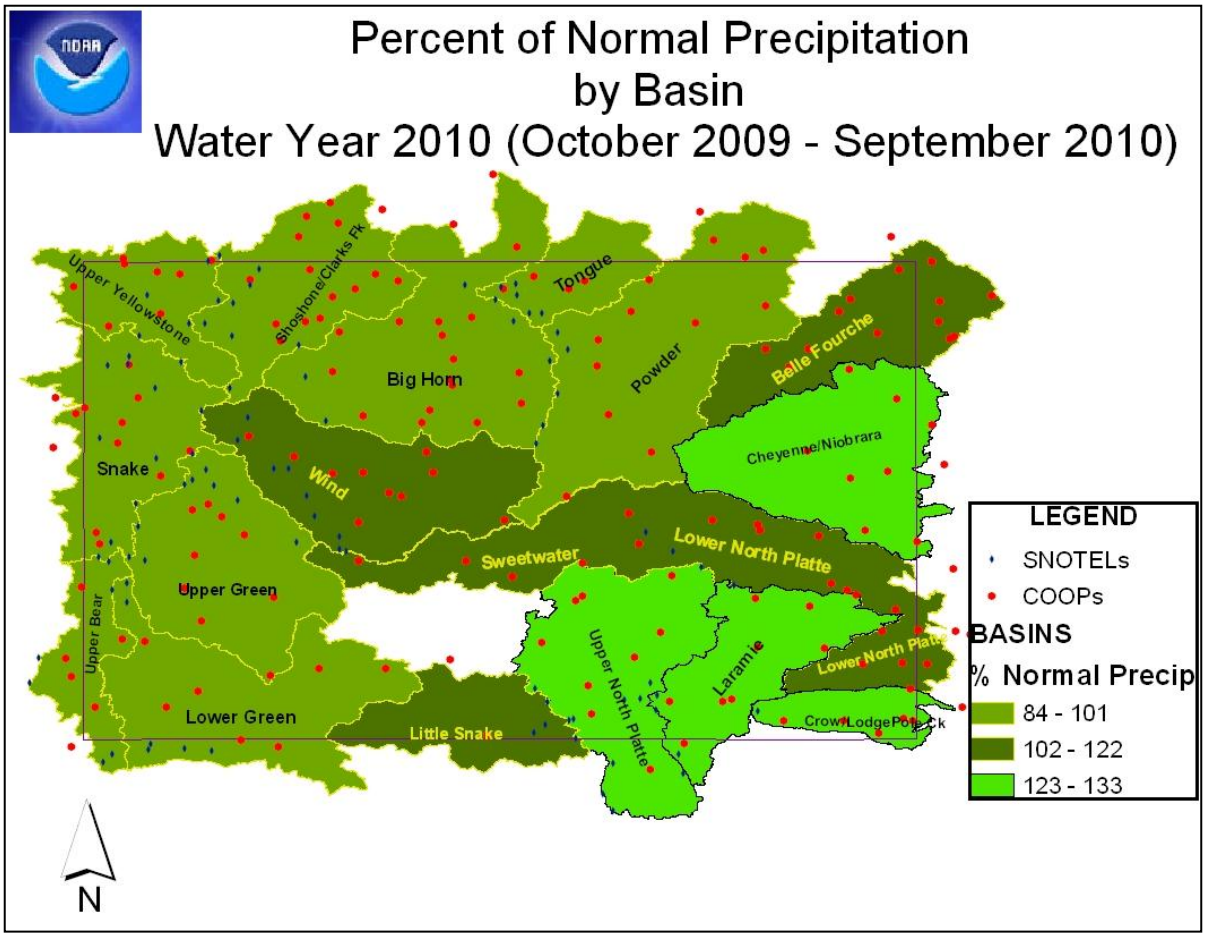






.Rangeland/Basin Precipitation…

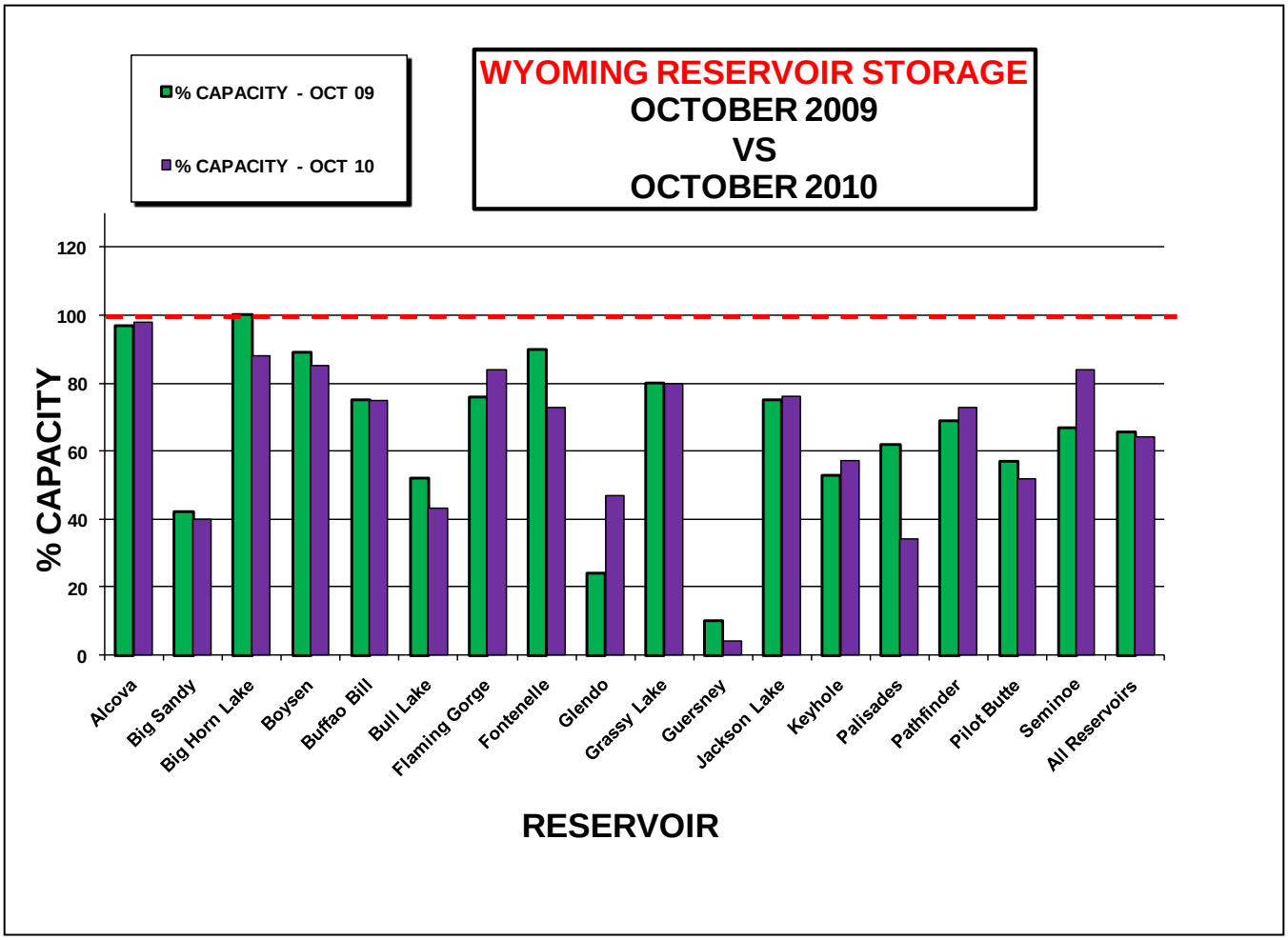
>> Basins--Current Water Year 2010 (October 2009 - September 2010)



>>Select Rangeland Locations for Water Year 2009

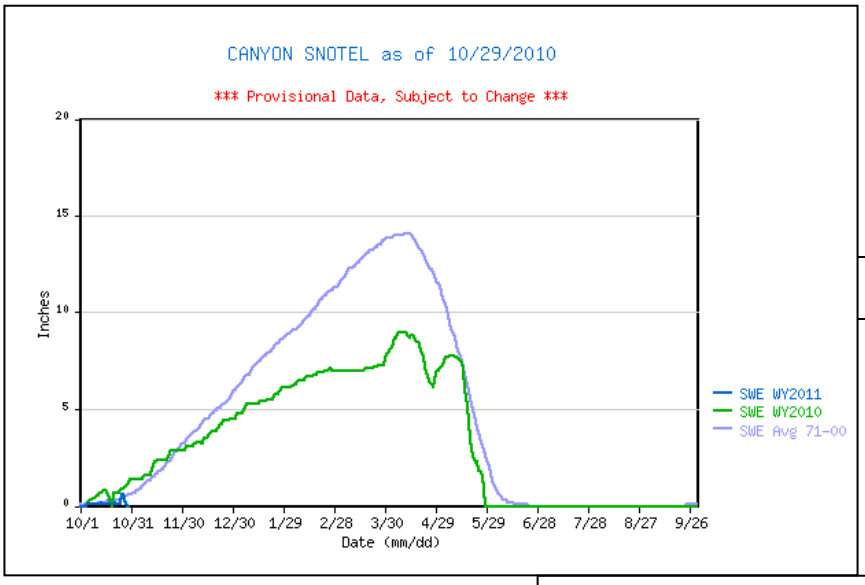
	OCT 09 - SEP 10 PRECIP	OCT 09 - SEP 10 AVERAGE	% AVERAGE
SHERIDAN	14.27	14.72	97
CHEYENNE	17.89	12.79	140
DOUGLAS	12.10	10.47	113
LARAMIE	9.66	8.48	114
RAWLINS	9.89	7.40	134
CASPER	12.13	13.03	93
LANDER	16.00	13.42	119
RIVERTON	12.46	8.68	143
ROCK SPRINGS	6.69	9.36	71
WORLAND	7.19	8.03	90
BUFFALO	12.39	13.44	91
PINEDALE	8.27	11.19	73
GILLETTE	18.91	16.27	116
EVANSTON	10.95	11.53	95

.Wyoming Water Supply…



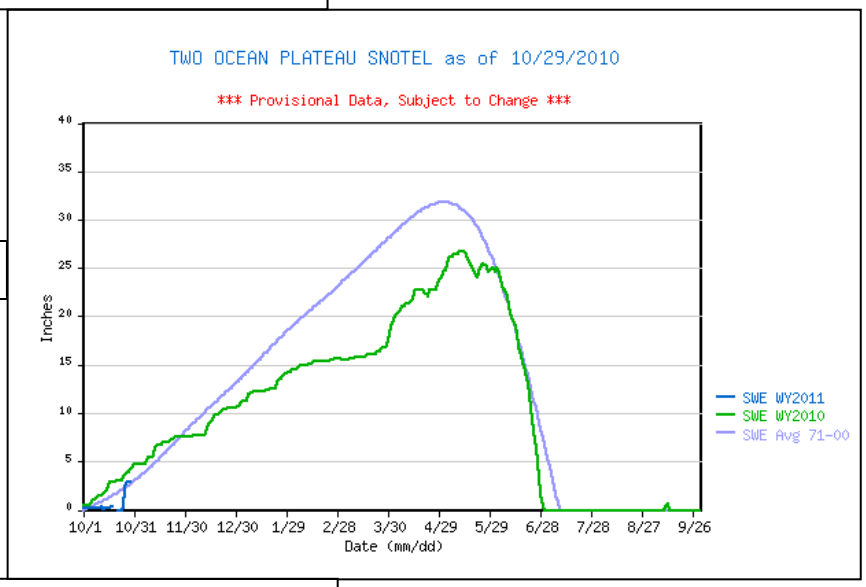
.Wyoming Mountain Snowpack…

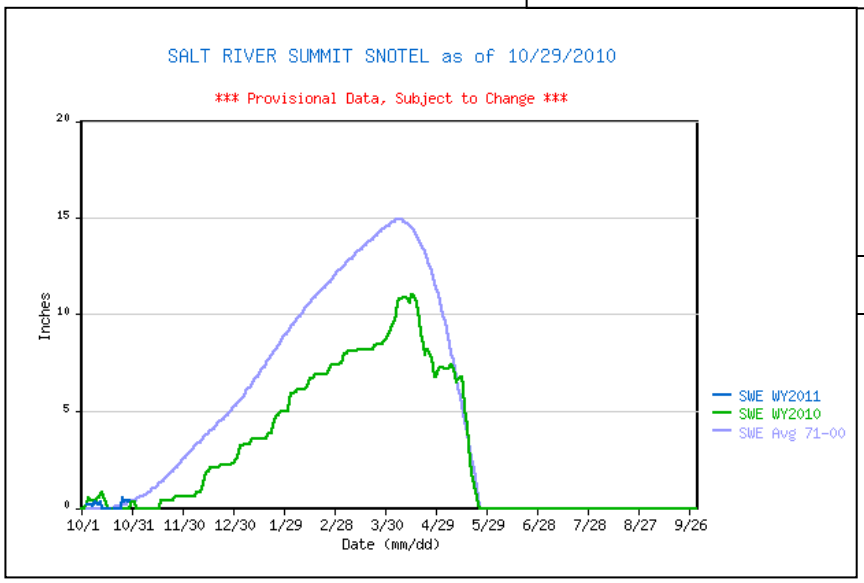
>>Wyoming SWE Trends for Water Year 2010…



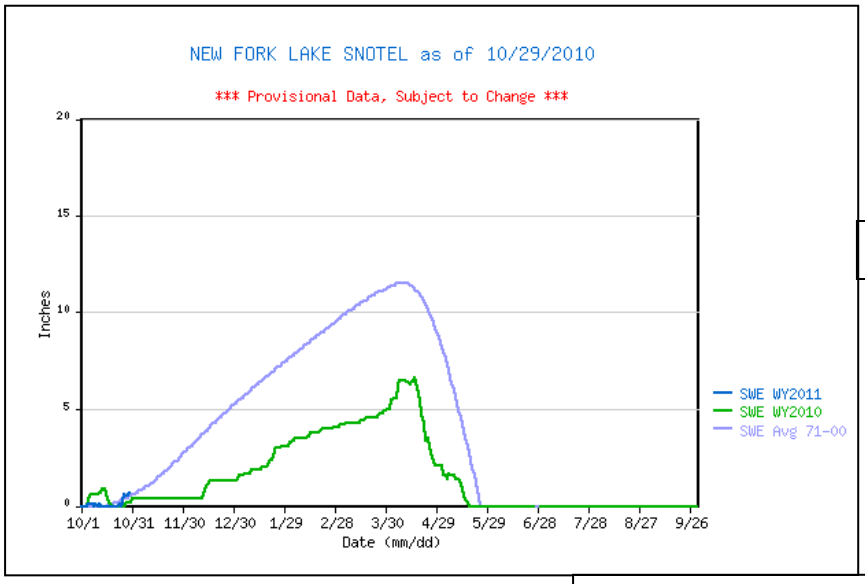
Upper Yellowstone River Basin

Snake River Basin

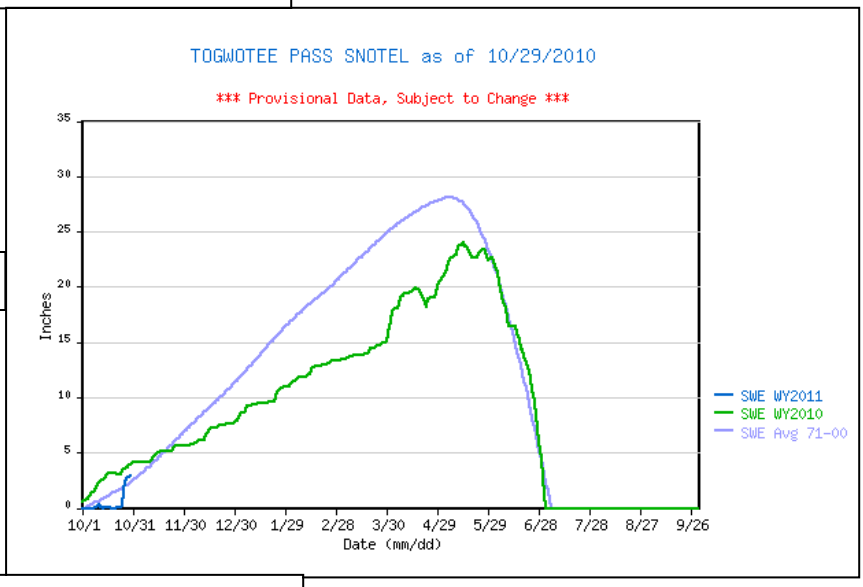




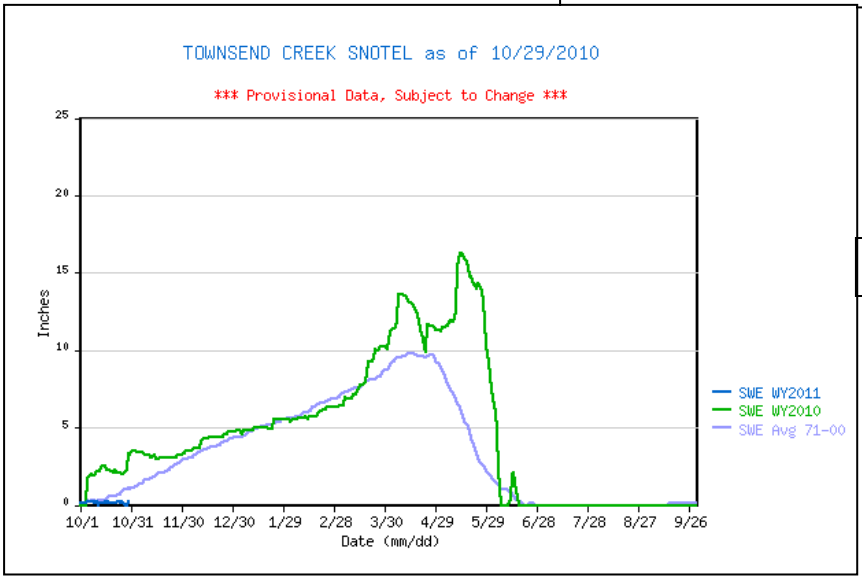
Salt River Basin



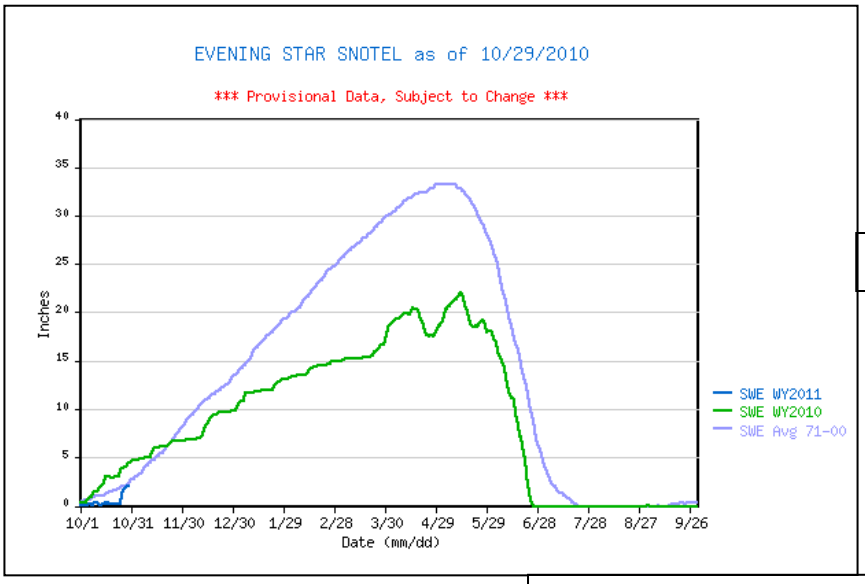
Upper Green River Basin



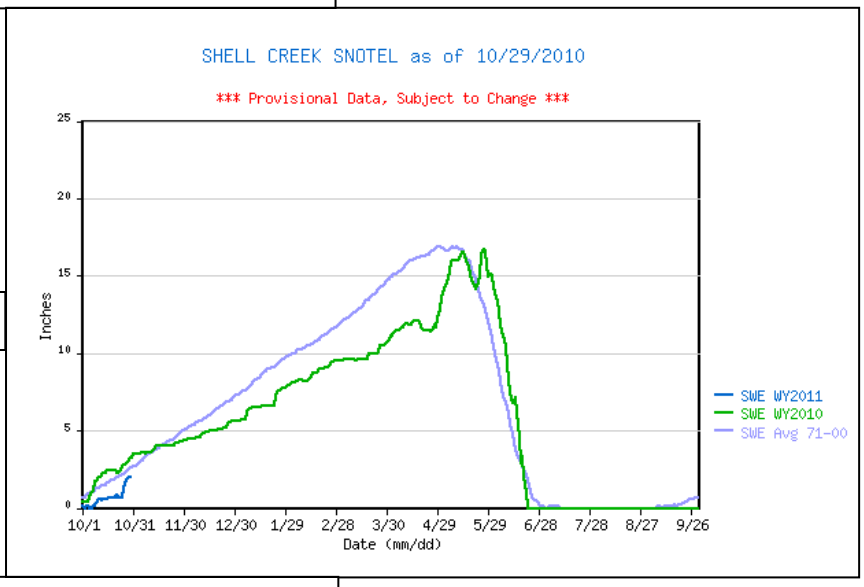
Upper Wind River Basin



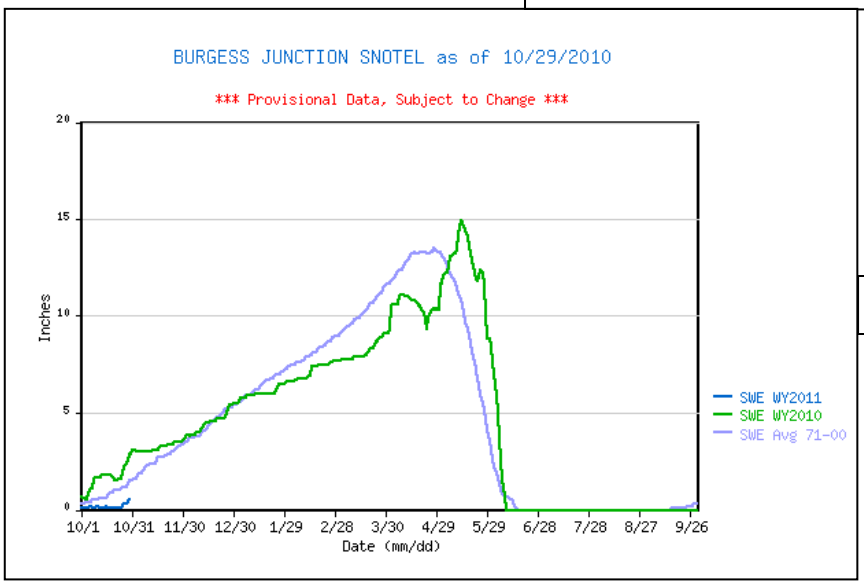
Lower Wind River Basin



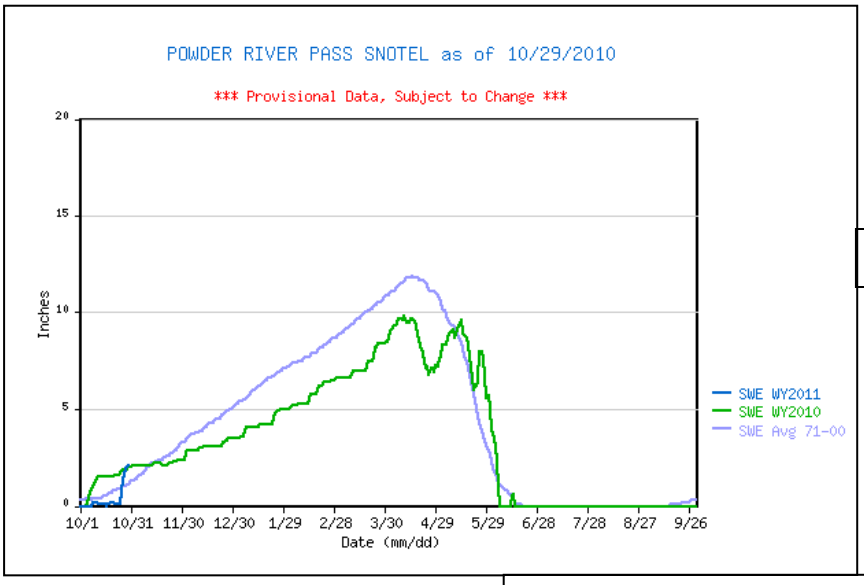
Shoshone River Basin



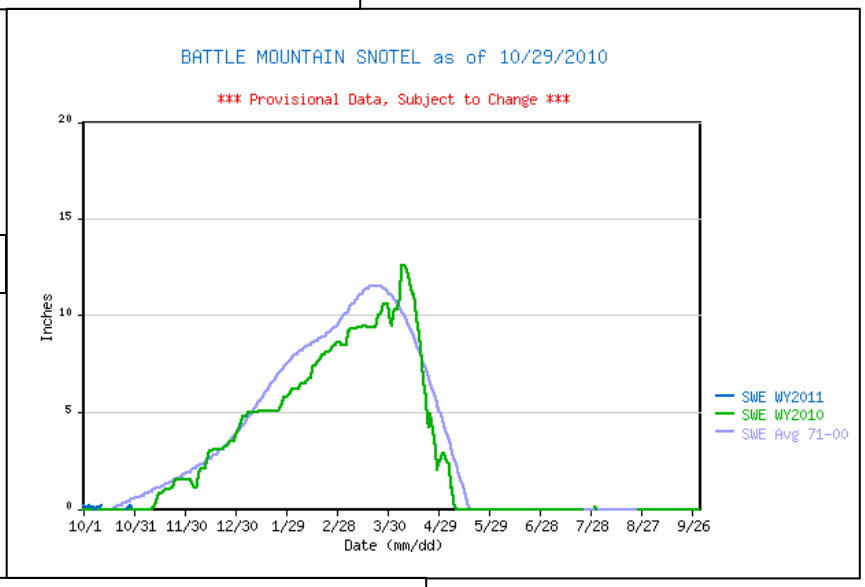
Big Horn River Basin



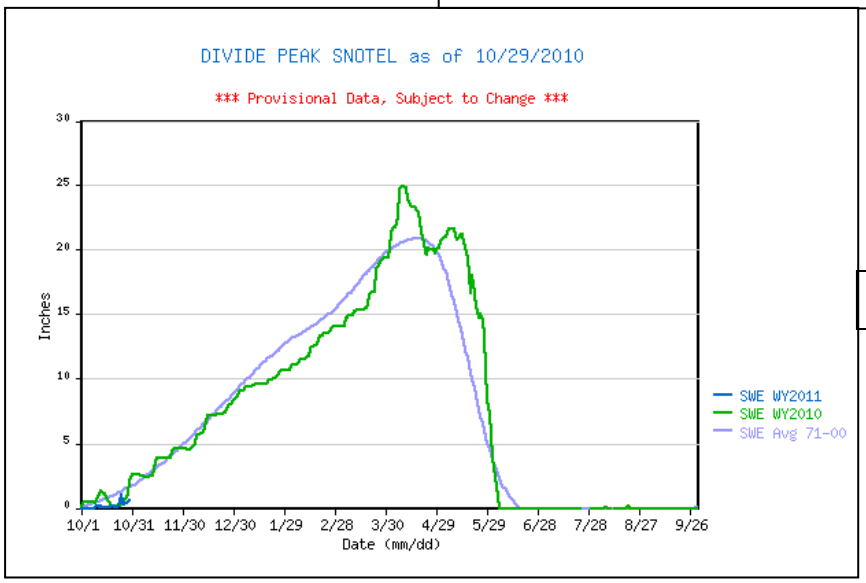
Tongue River Basin



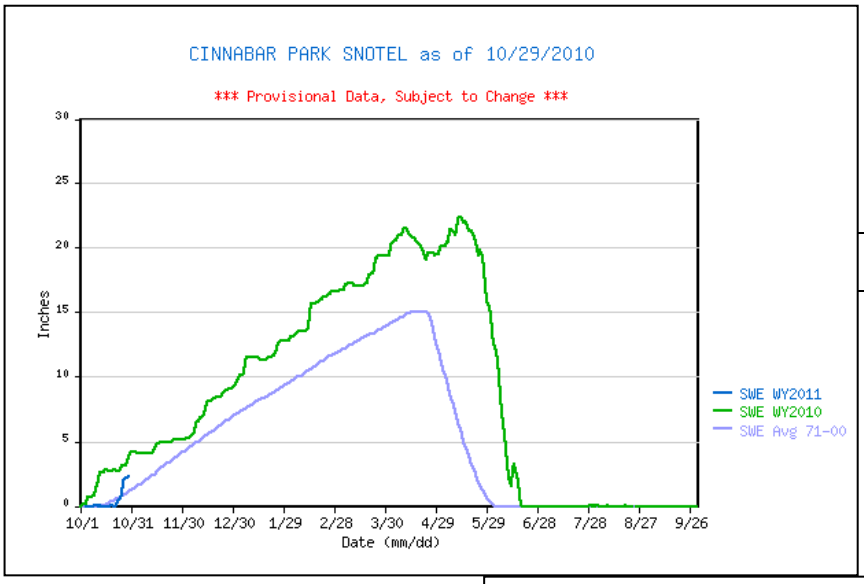
Powder River Basin



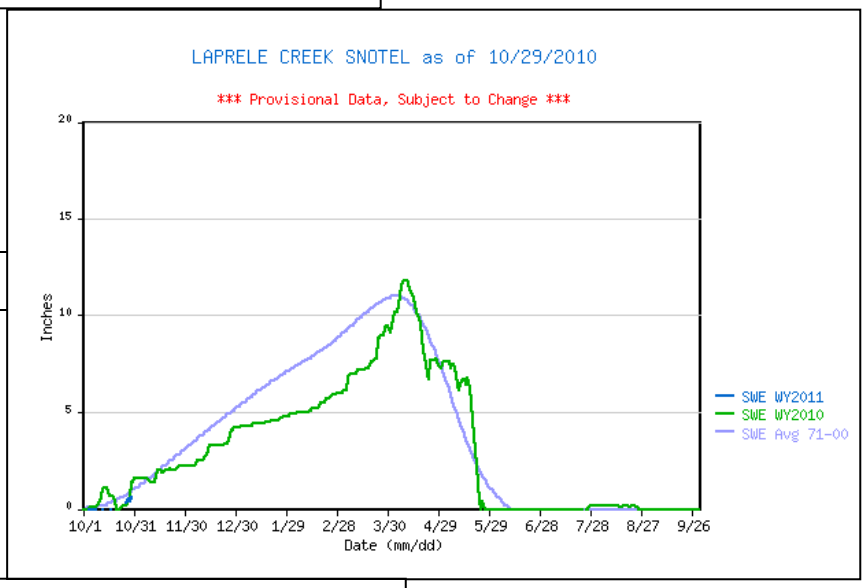
Little Snake River Basin



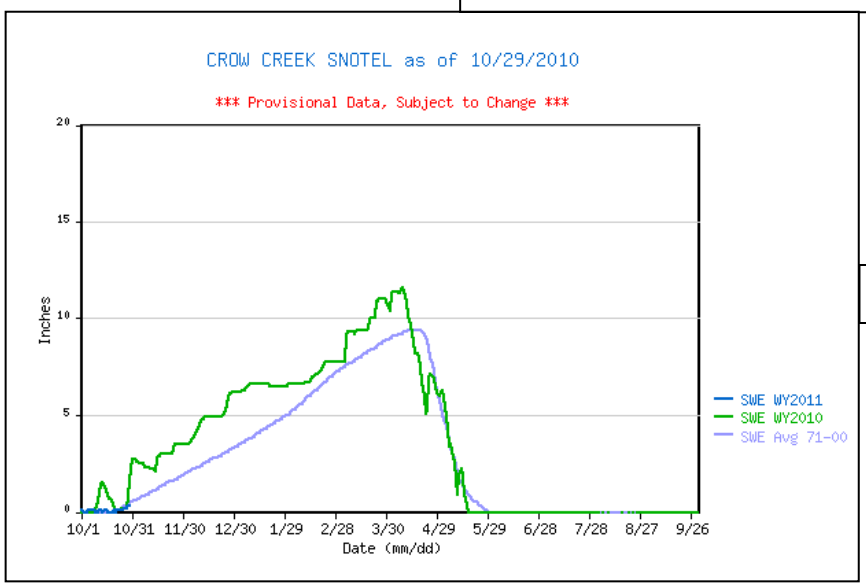
Upper North Platte River Basin



Laramie River Basin



Lower North Platte River Basin

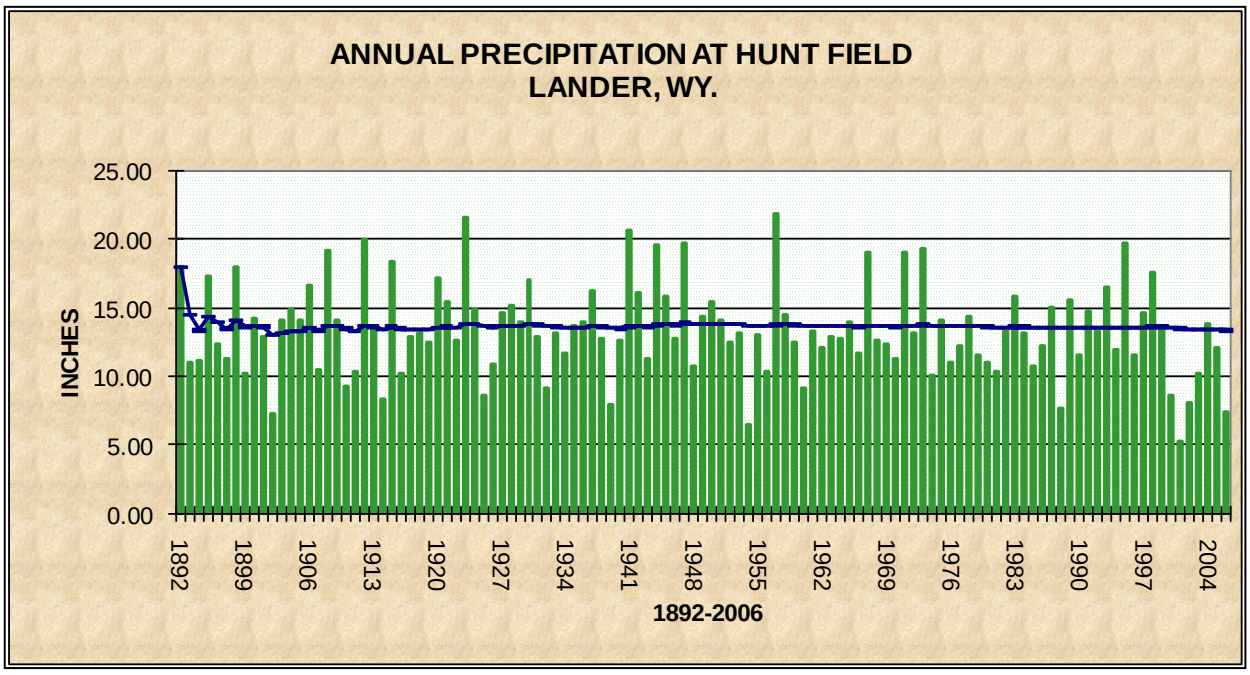


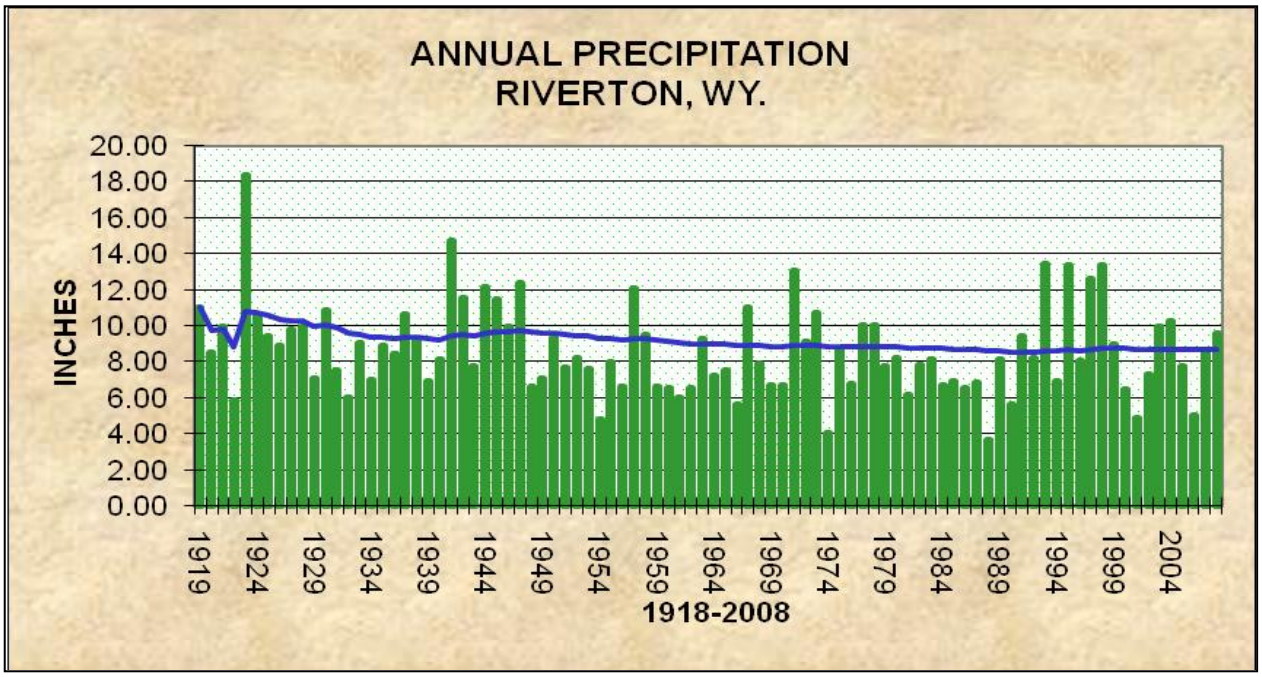
Crow Creek Basin

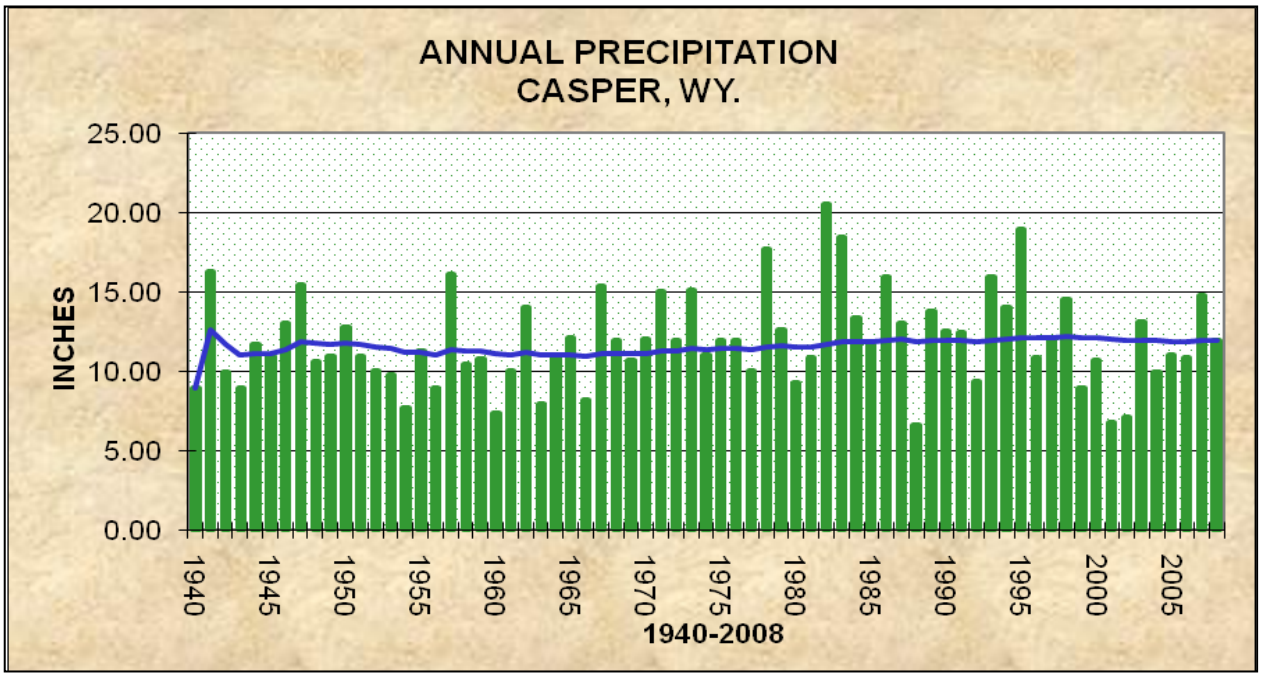
.Miscellaneous Drought Graphics…

>>Long Range Precipitation Trends…

Lander's precipitation records go back to 1892—Riverton's precipitation records go back to 1919—and Casper's precipitation records go back to 1940.



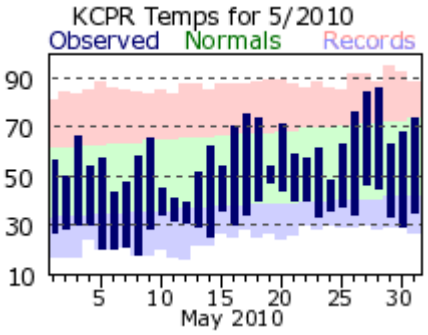


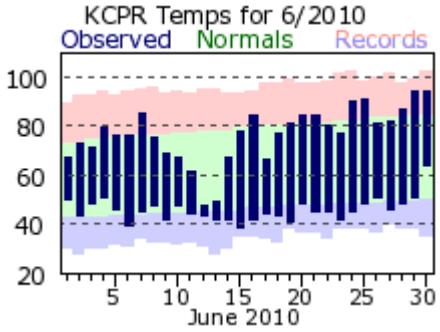


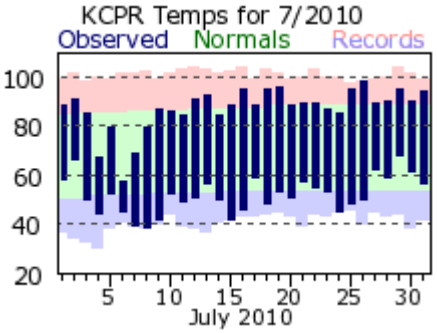
>> Short-term Temperature Trends…

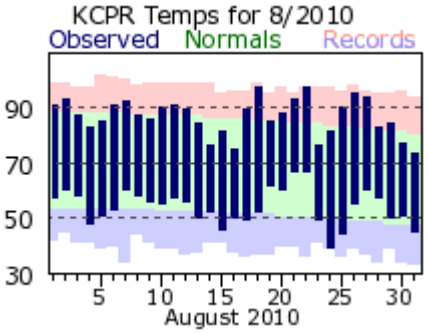
Near normal temperatures for most the summer; **above** normal temperatures during September.

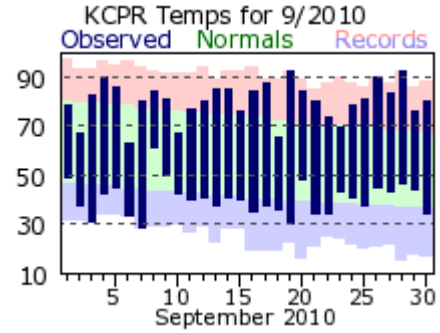
Casper



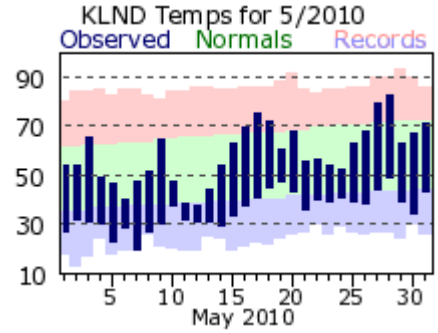


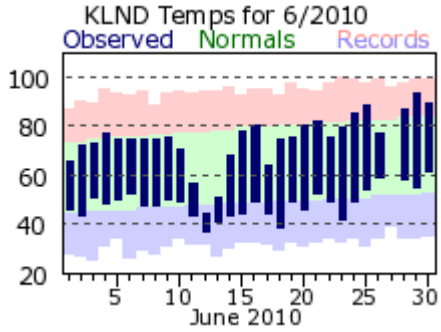


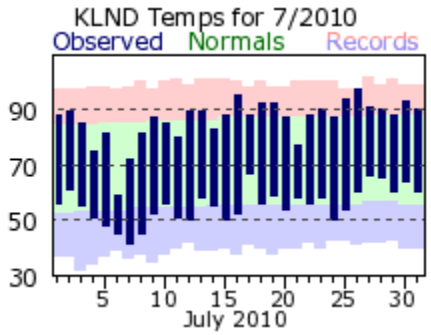


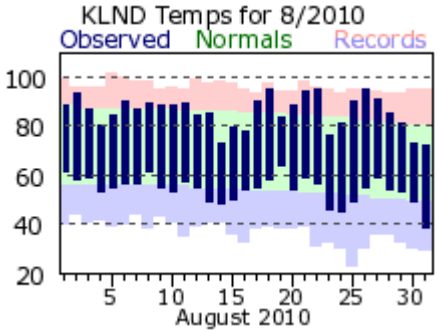


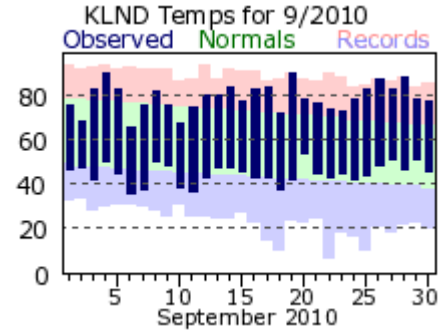
Lander



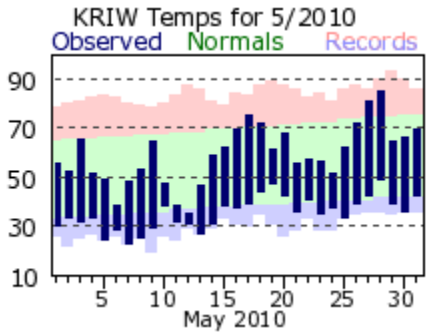


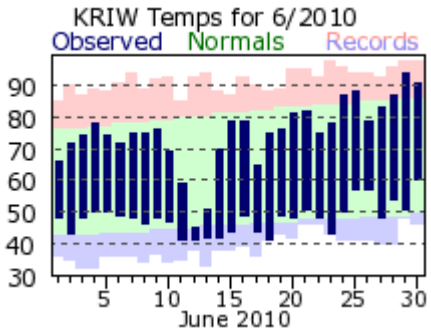


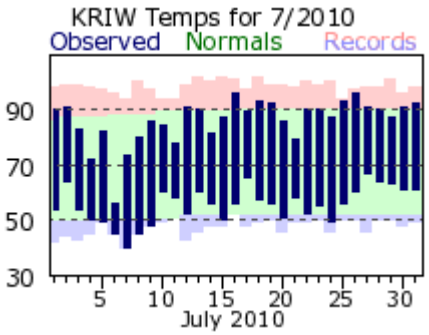


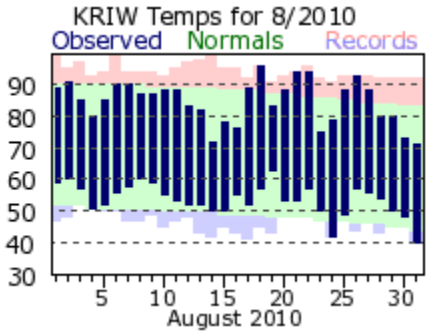


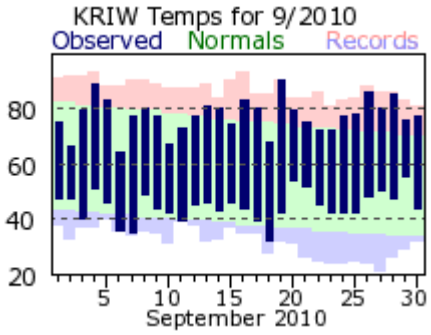
Riverton



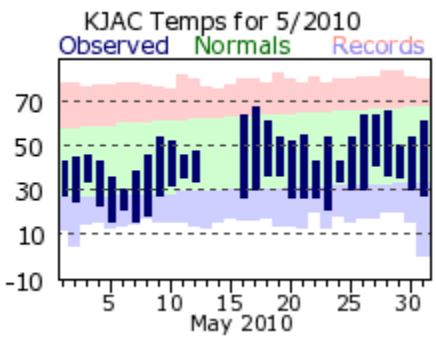


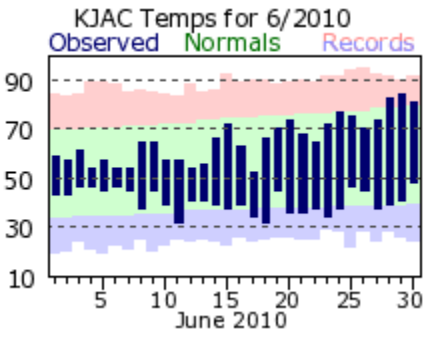


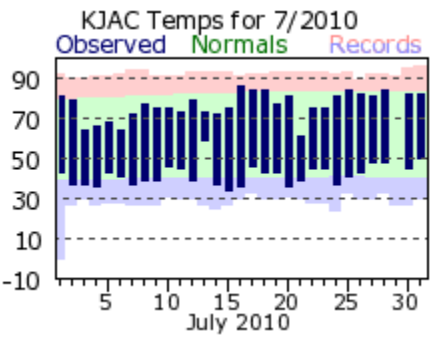


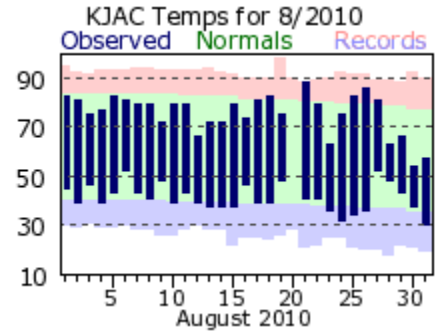


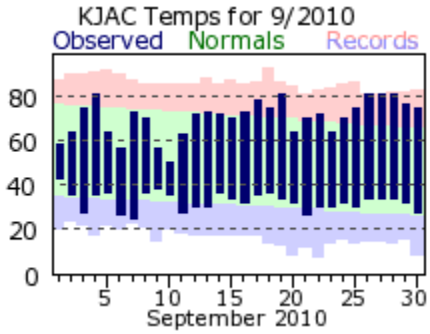
Jackson



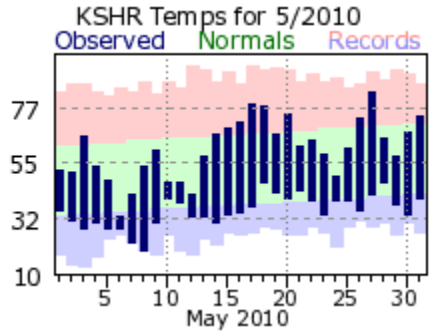


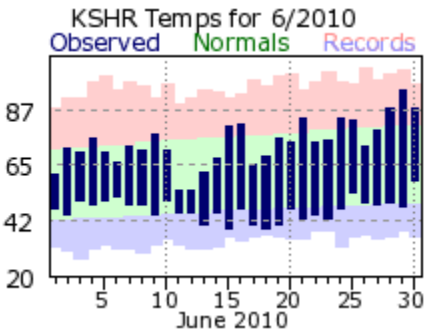


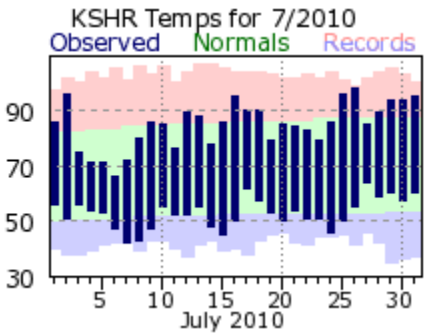


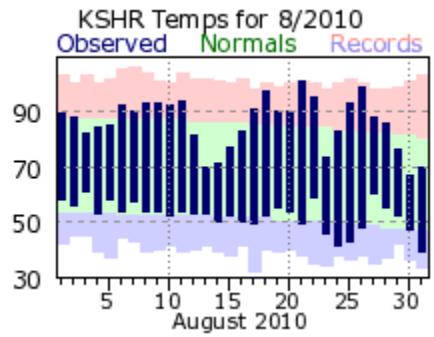


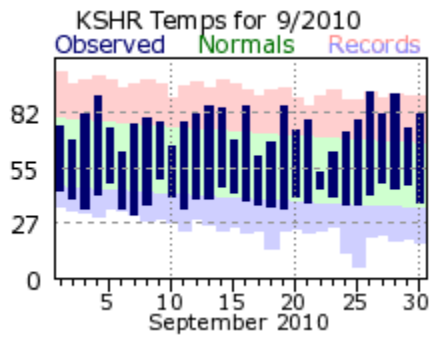
Sheridan



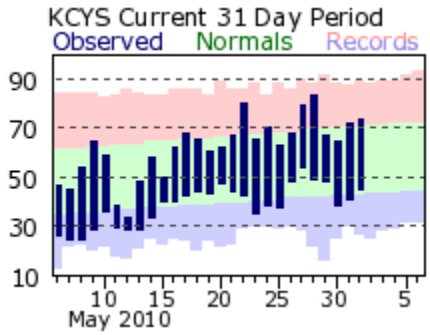


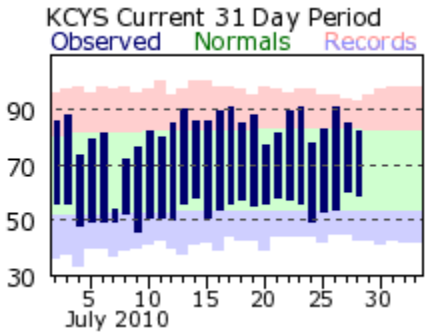


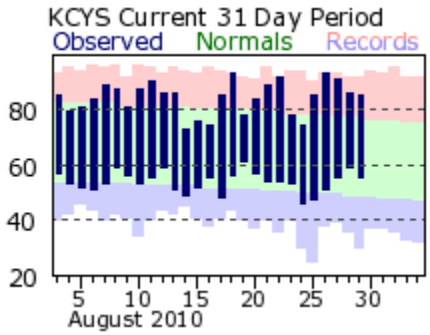


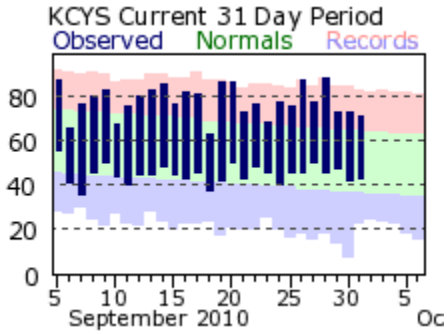


Cheynnne



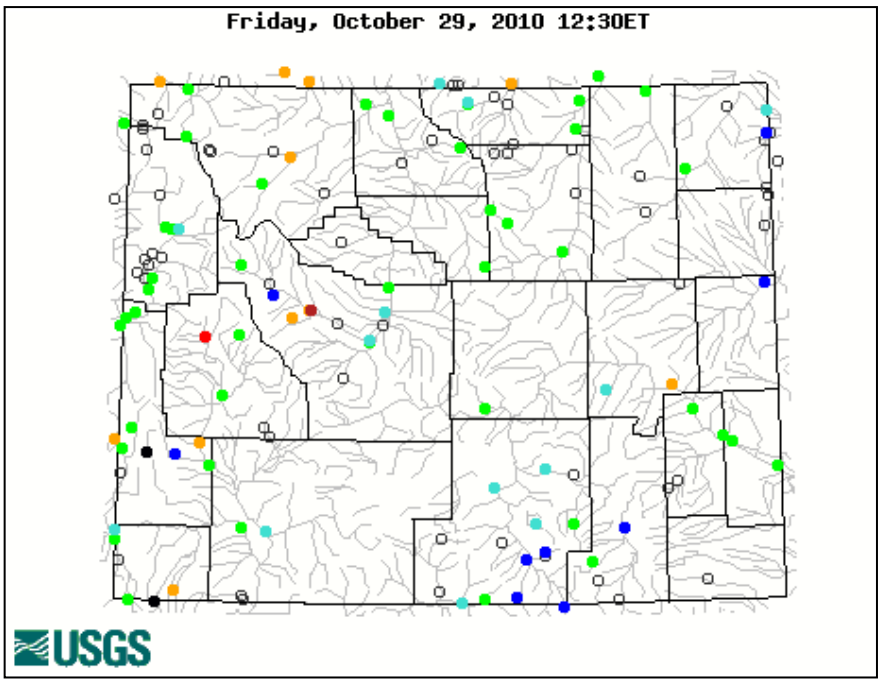


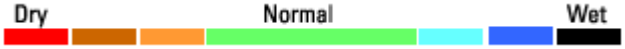


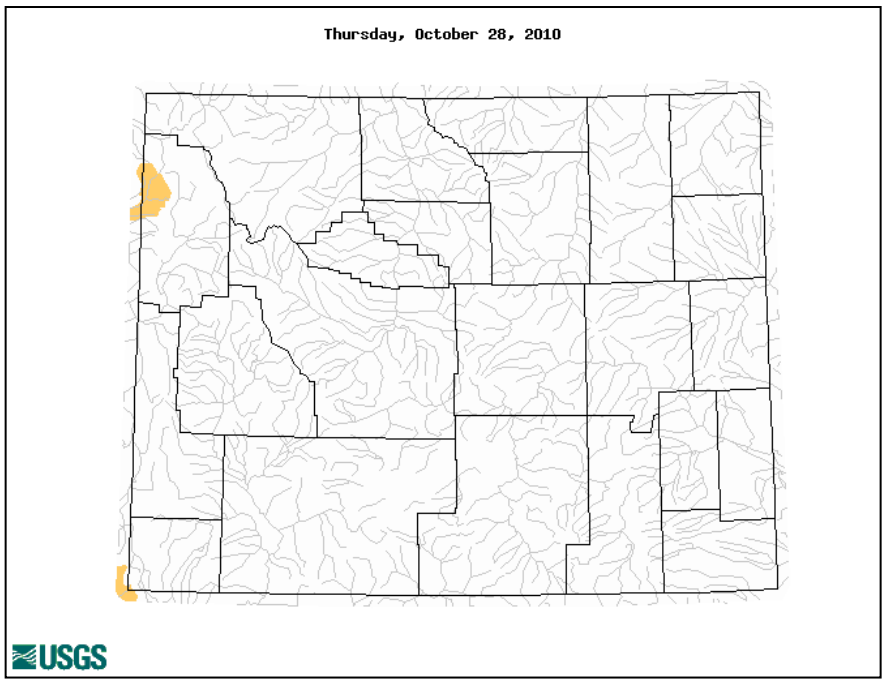


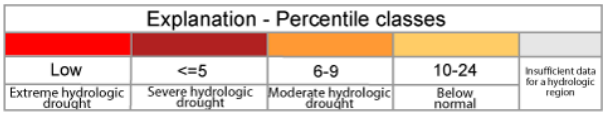
>>River and Streamflow Conditions…

Near normal to slightly above streamflows in Wyoming.



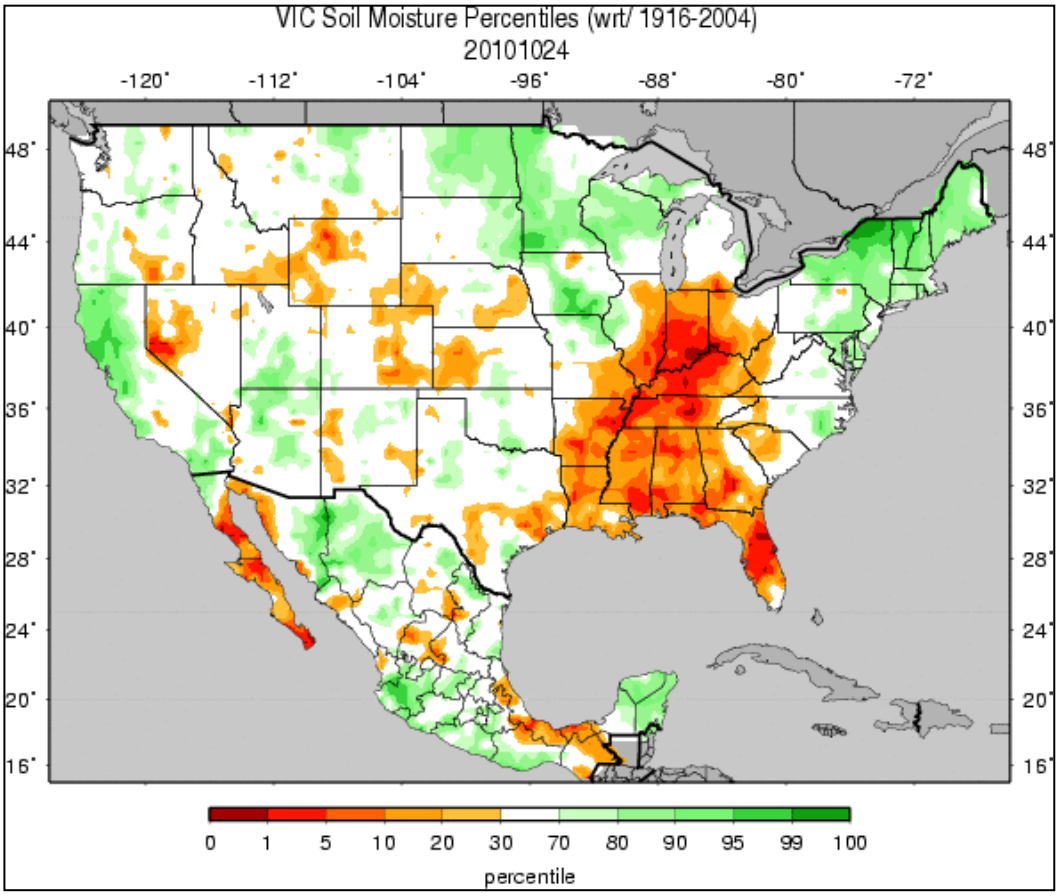






Map of below-normal streamflow conditions for Wyoming.

>>Soil Moisture Conditions…



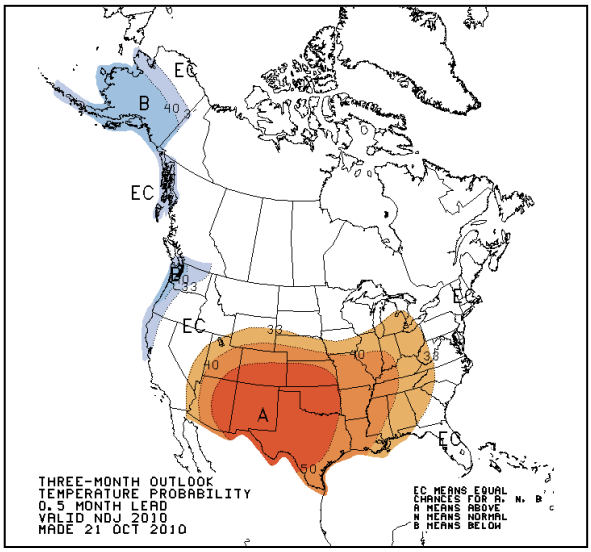
>>Precipitation/Temperature Outlooks…

NOAA's climate prediction center (CPC) is predicting that Wyoming will have **above** normal temperatures for the remainder of the fall….with near normal temperatures for the upcoming winter. CPC is also predicting **above** normal precipitation totals for the remainder of the fall and into the winter for central and western Wyoming---while eastern Wyoming can expect near normal precipitation totals.

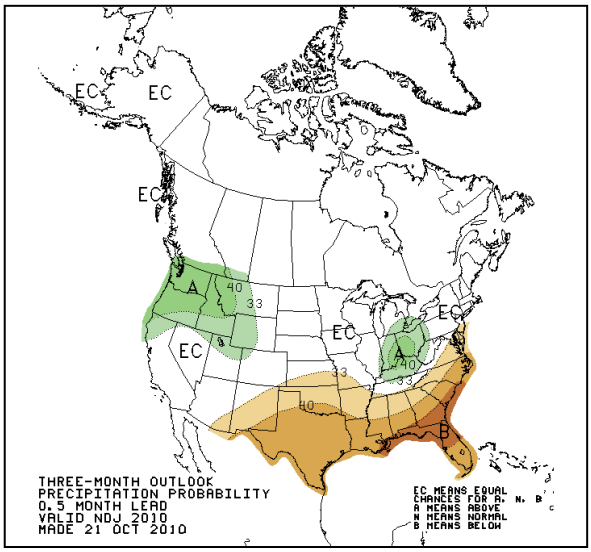
Interestingly, the Farmer's Almanac is predicting a "**Mild with Average Precipitation**" winter across Wyoming.

November - December

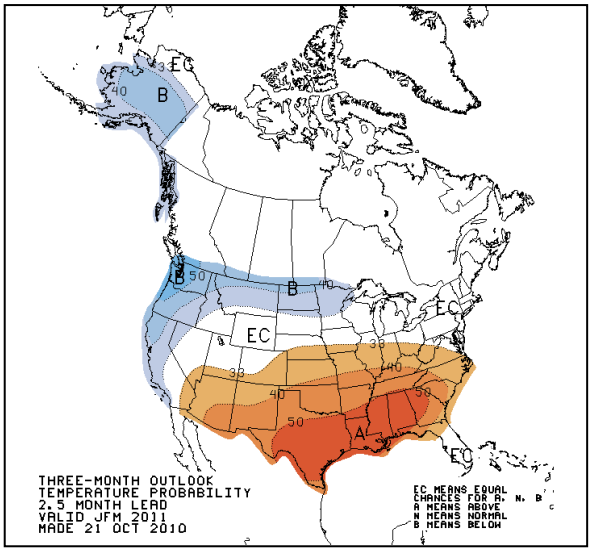
Temperature

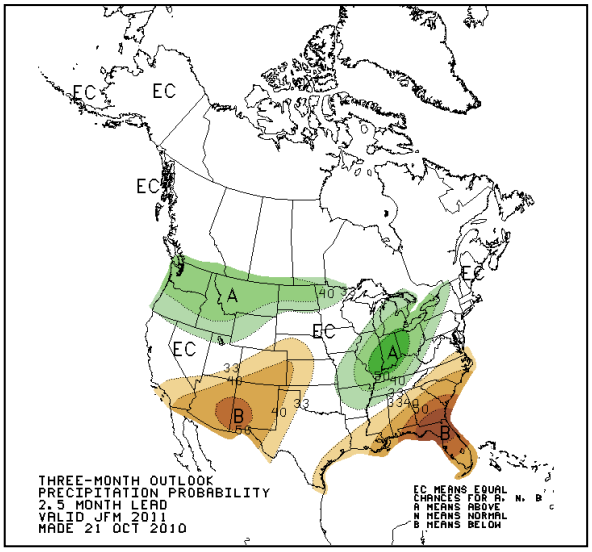


Precipitation

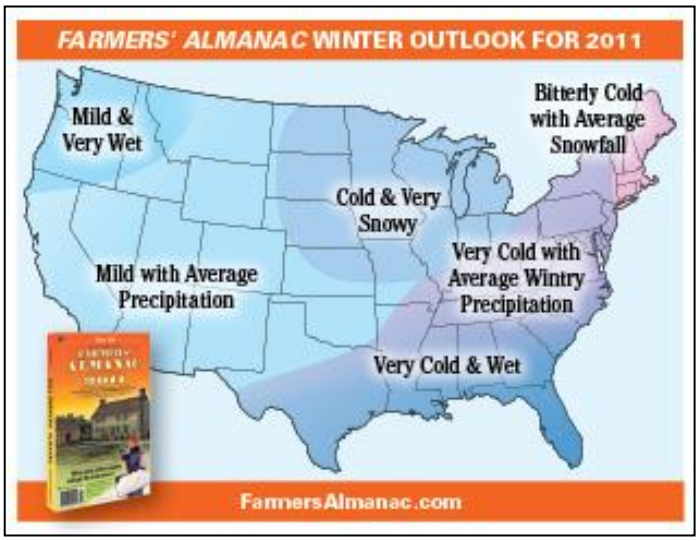


January - March 2011





Farmer's Almanac (January - March 2011)



.Questions or comments…

If you have any questions or comments about this drought information, please contact:

Jim Fahey
Hydrologist
NOAA/National Weather Service
Riverton, WY
307-857-3898
James.Fahey@noaa.gov

.Related web sites…

Wyoming Drought Site…
www.wrds.uwyo.edu/wrds/wsc/dtf

USGS Wyoming Drought Watch…
www.wy.water.usgs.gov.projects/drought

U.S. Drought Monitor…
www.drought.unl.edu/dm/monitor.html

NOAA Drought Page…
www.drought.noaa.gov

Western Regional Climate Center…
www.wrcc.dri.edu

NOAA/NWS Climate Page…
www.weather.gov/climate/index/php?wfo=riw

Wyoming River Information…

NWS - **www.crh.noaa.gov/ahps2/index.php?wfo=riw**/(or cys/unr)
http://ahps2.wrh.noaa.gov/ahps2/index.php?wfo=slc/(or byz)

USGS - **www.waterdata.usgs.gov/wy/nwis/rt**

NRCS Snow Survey/Snowpack Information…
www.wrds.uwyo.edu/wrds/nrcs

Climate Prediction Center…
www.cpc.ncep.noaa.gov

.Acknowledgements…

This Wyoming Graphical Drought Informational Statement is a multi-agency effort involving NOAA's National Weather Service and the National Climatic Center, the NRCS, Wyoming State Climatologist's Office, regional center climatologists, and the National Drought Mitigation Center. Information for this statement has been gathered from the NWS and FAA observation sites…state cooperative services…the NRCS…and the USGS.

.Next issuance…

This product will be updated by the **middle of April 2011--**to correspond with the beginning of the irrigation season.